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GORGONOLAUREUS, A NEW GENUS OF ASCOTHORACID BARNACLE ENDOPARASITIC IN OCTOCORALLIA

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GORGONOLAUREUS, A NEW GENUS OF ASCOTHORACID BARNACLE ENDOPARASITIC IN OCTOCORALLIA

By Huzio Utinomi[1]

Dr. Frederick M. Bayer of the United States National Museum sent me for study two specimens of ascothoracids which he discovered within the bark of a Holaxonian gorgonid coral, *Paracis squamata* (Nutting), collected from Bikini Atoll by the Bikini Scientific Resurvey in 1947, during the second expedition to the Marshall Group (Bayer, 1949). When I first examined these specimens, I thought that they looked remarkably like *Baccalaureus*, a well-known ascothoracid endoparasitic in the Zoantharia (Hexacorallia). This discovery is very interesting, because Ascothoracida from an Octocorallia habitat are so far unknown.

Only two specimens were available for examination, and one had been cut off into halves before coming to me; I examined this one in situ, because it cannot be replaced. The other complete specimen wholly buried in the bark of the gorgonid was retained undissected so as to preserve the paratype.

Owing to the scantiness of the material, I could not observe the minor structures of the internal body in detail; however, there seems

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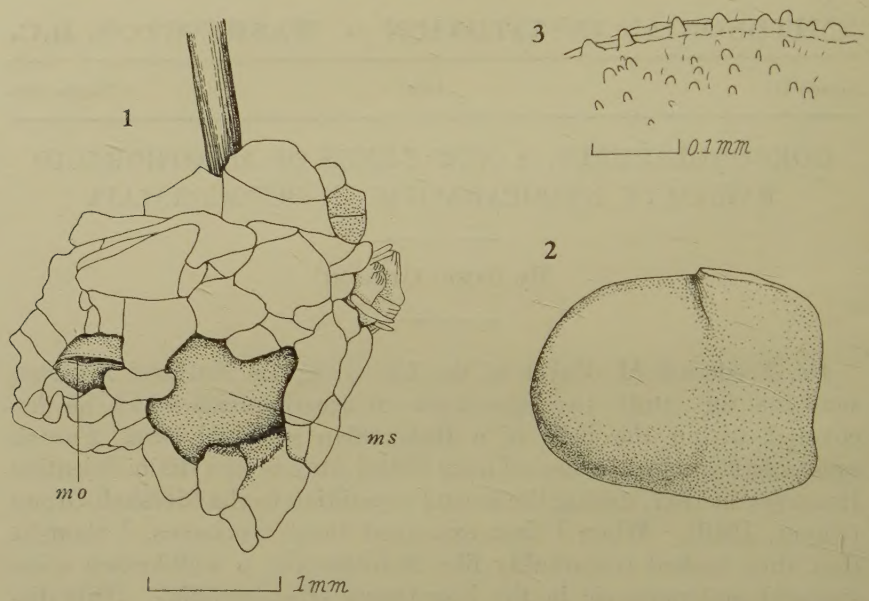
to be no room for doubting that the two specimens represent a new type of the Ascothoracida. *Gorgonolaureus bikiniensis*, new genus and species, is the name which I propose herein for this remarkable endoparasitic crustacean.

Family Lauridae

Gorgonolaureus, new genus

DIAGNOSIS: Aberrant endoparasitic Ascothoracida with saclike mantle somewhat compressed, leaving a large slitlike mantle opening



FIGURES 1–3.—*Gorgonolaureus bikiniensis:* 1, Paratype wholly buried in the bark of a Holaxonian gorgonid *Paracis squamata* (Nutting) (*mo*, mantle opening; *ms*, mantle sac); 2, outer side of mantle sac of the holotype; 3, marginal part of outer surface of mantle sac, highly magnified.

posteriorly above. Hermaphrodite. Body proper within mantle sac, apparently not well segmented, with six pairs of two-segmented thoracic appendages bearing long setae. Abdomen shortened, apparently unsegmented, with a pair of caudal furca. A pair of filamentary appendages or "horns" present on dorsal side of prosoma. Development in mantle cavity of hermaphrodite up to metanauplii. Male unknown. Endoparasitic in Gorgonacean cortex.

TYPE SPECIES: *Gorgonolaureus bikiniensis*, new species.

***Gorgonolaureus bikiniensis*, new species**

FIGURES 1–9

TYPE SPECIMENS: Holotype with metanauplii, cut off into halves, USNM 107150. Paratype, total animal wholly buried in the bark of a Holaxonian gorgonid *Paracis squamata* (Nutting), USNM 107151.

TYPE LOCALITY: Off Enyu Pass, Bikini Atoll, Marshall Islands, Micronesia, 700–725 feet (dredged), Aug. 22, 1947.

DESCRIPTION: The animal, presumably hermaphrodite, is very small in comparison with the other ascothoracids, measuring about 2.12 mm. in length and about 1.94 mm. in width.

Its saclike mantle (figs. 1, 2) is somewhat compressed laterally, rather globular anteriorly and subtruncate posteriorly. The mantle (fig. 1) opens on the upper side of the subtruncate and somewhat com-

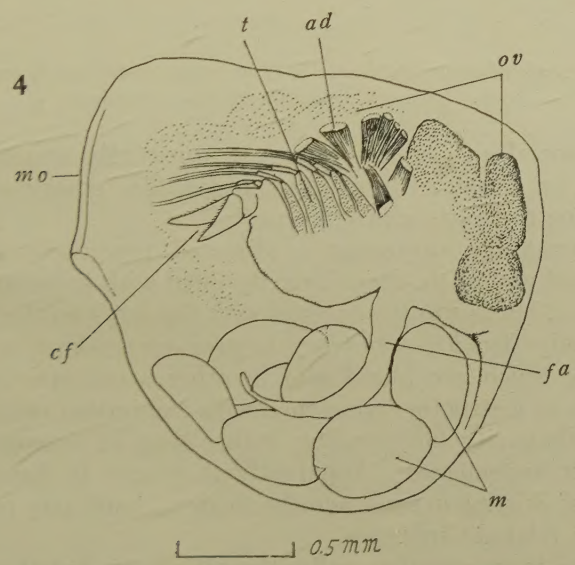
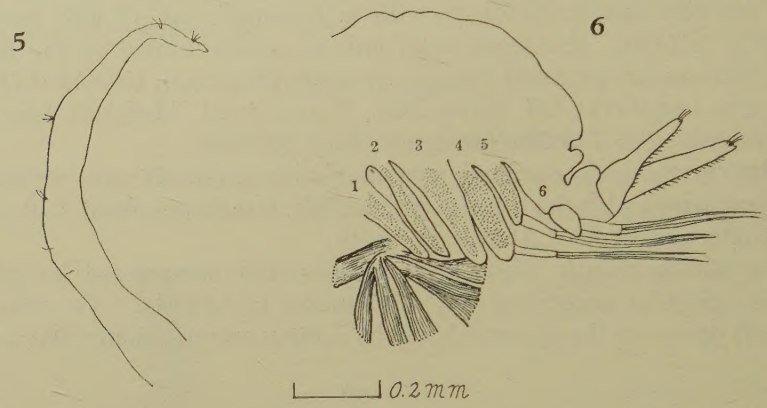


FIGURE 4.—*Gorgonolaureus bikiniensis*, inner body of the holotype (*ad*, adductor muscles; *cf*, caudal furca; *fa*, filamentary appendage or "horn"; *m*, metanauplii; *mo*, mantle opening; *ov*, ovaries; *t*, "testes").

pressed posterior half and is rather large, in a slit form. The outer surface of the mantle (fig. 3) has many simple spinules, as in *Baccalaureus japonicus* (cf. Broch, 1929, fig. 2).

The body proper within the sac, which is relatively large, may be divided into three regions (figs. 4, 6), prosoma, thorax, and abdomen. The anterior part of the body is much swollen and filled with a bulky mass of ovaries (fig. 4). The oral cone (and the antennules too, if any) could not be well defined, but a number of strong adductor

muscles are present. The ovaries form a rather thin layer on the inner side of the mantle-sac around the body.



FIGURES 5–6.—*Gorgonolaureus bikiniensis:* 5, Filamentary appendage; 6, posterior part of body. Numerals denote the thoracic appendages.

On the dorsal side of the prosoma, apparently connecting with the thorax, are a pair of large structureless filamentary appendages, corresponding to Brattström's "horns."

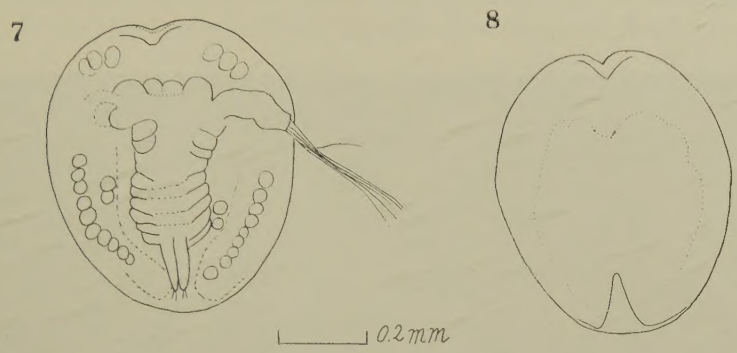
Each filamentary appendage is directed posteriorly and gently bends upward within the mantle cavity filled with metanauplii. It is almost naked, but is scantily covered with fine hairs on the dorsal side and terminally (fig. 5). Contrary to previous authors' views, these appendages, which are found also in other ascothoracids, may be looked upon as a structure concerned with respiration or the aeration of the mantle cavity for brooding, rather than as antennules or the first thoracic appendages. Apparently they may be homologous to such "horns" existing in some acrothoracids and ordinary pedunculate forms of the related Cirripedia.

The thorax is apparently smaller than the head, but the segmentation could not be well defined in situ because of the obscurity of the contents. At the posterior end the body abruptly narrows and bends ventrally (upwards, in situ), leading to the shortened abdomen.

The abdomen protruded ventrally is very short and apparently unsegmented. Terminally it bears a pair of large caudal furca triangular in outline and fringed with fine hairs ventrally, and with longer hairs terminally.

The first pair of the six thoracic appendages are slightly separated from the succeeding pairs, and the last are widely separated, lying close to the lateral sides of the abdomen. These legs are better

developed than corresponding ones in the related genera *Laura* and *Baccalaureus* and are two-segmented. In the anterior five pairs, which are subequal in size, the pedicel is elongate and sticklike and



FIGURES 7–8.—*Gorgonolaureus bikiniensis:* 7, Metanauplius, ventral view; 8, metanauplius, dorsal view.

contains the "testes" (fig. 4). The distal segment is shorter and slender and bears long setae, at least two in each pair. It is, however, problematic at present whether they are uniramous as in *Baccalaureus* or biramous as in *Ascothorax* (Djakonov, 1914; Stephensen, 1935). Apparently there is no trace of the "penis" at the posterior end of the thorax.

In the mantle cavity of the holotype specimen, at least 14 or 15 well-developed metanauplius larvae lay dorsally to the body and were supported by the filamentary appendages from both sides (fig. 4).

As figured here in magnification (figs. 7, 8), the metanauplii are two-shelled like the larvae of *Ulophysema öresundense* (Brattström, 1948a). They are approximately 0.59 mm. long and 0.47 mm. wide. The carapace or dorsal shield is coalesced in the median line and is elliptical but somewhat broader in the anterior than in the posterior half; the anterior end is slightly concave, the posterior end strongly notched. The three original pairs of naupliar appendages are at the ventral side of the anterior part of the dorsal shield, although the posterior two (antennae and mandibles) are only slightly traceable. The posteroventral part of the body projects posteriorly as an abdominal protrusion. The whole median part of the ventral side is thickened and indistinctly folded into six segments which will be the swimming legs of later stages. The terminal furca were unusually protruding.

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No male was found in the holotype specimen.

In the general organization as described above, this ascothoracid much resembles the zoanthid-infesting genus *Baccalaureus* and may be reckoned as a new member of the family Lauridae. The segmentation of the body is not well defined, but the presence of six thoracic

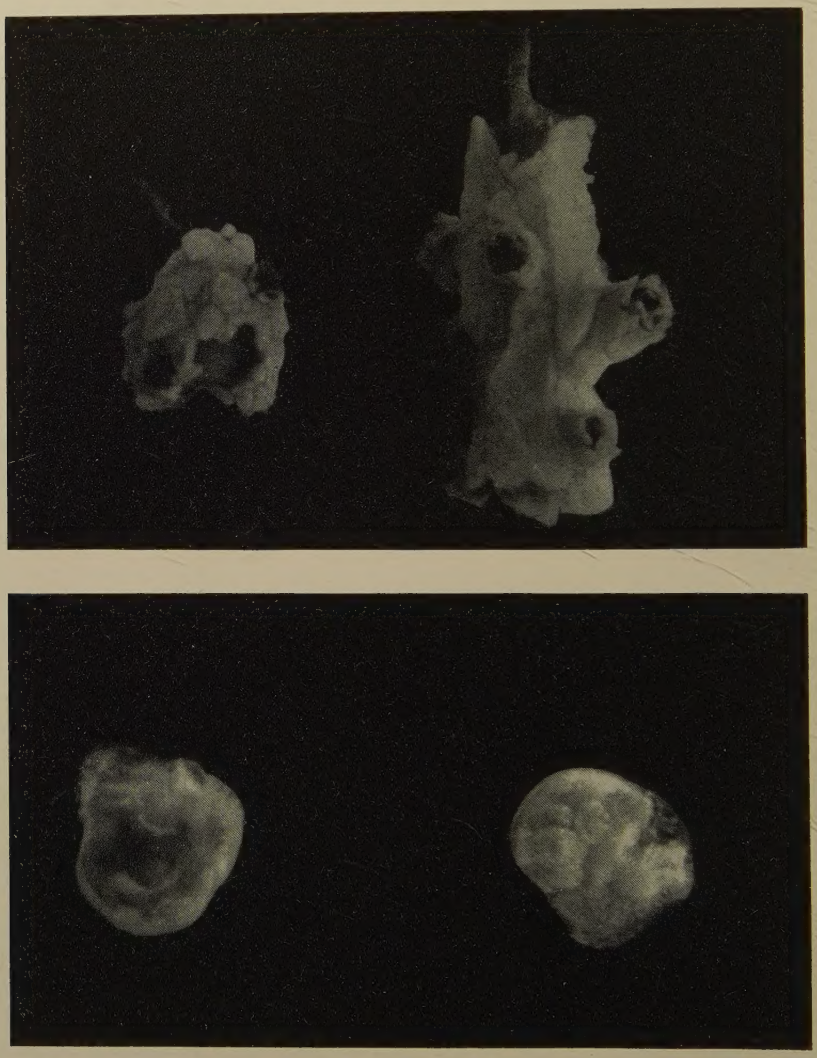

FIGURE 9.—*Gorgonolaureus bikiniensis:* Top left, the paratype wholly buried under the cortical scales of a Holaxonian gorgonid *Paracis squamata* (Nutting), partly exposed; top right, part of the bark of *P. squamata* into which the holotype was probably infested; bottom left, inner view of left half of mantle sac of the holotype, containing animal body; bottom right, inner view of right half of mantle sac of the holotype, containing mass of metanauplii. All about ×10.

appendages is undoubtedly obvious. In all known species of *Baccalaureus* (at least 10 at present), the thoracic appendages are uniramous and unsegmented and vary from three to six pairs. In the genus *Laura* (only one species), however, the six thoracic appendages are uniramous and faintly segmented(?). In *Ascothorax ophioctenis* Djakonov of the Synagogidae, the six pairs of thoracic appendages are biramous and two-segmented (and with two-articulate pedicel) (Stephensen, 1935). In the more primitive(?) genus *Synagoga* parasitic on the Antipatharia and Crinoidea, the six pairs of thoracic appendages are distinctly biramous, segmented, and very much setigerous (Norman, 1913; Okada, 1926, 1938). It follows then that the genus *Gorgonolaureus* here described should be included in the family Lauridae which has certain affinities with the Synagogidae, especially *Ascothorax*.

Finally, it is interesting to note that this is the first recorded occurrence of the Ascothoracida in the group of Octocorallia and is the smallest of the Ascothoracida.

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